



SEG WORKSHOP


MUSCAT, OMAN • 3-5 NOVEMBER 2014

Exploiting Deep-gas Resources through Advanced Geophysical Technology

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Technical Committee Members



Co-Chair **Aiman Bakhorji** Saudi Aramco

Aiman Bakhorji is a chief geophysicist working for the Exploration Technical Service Department of Saudi Aramco in Dhahran, Saudi Arabia. He has been working for Saudi Aramco for the past 17 years. He received a Ph.D. degree in rock physics/geophysics in 2009 from the University of Alberta in Edmonton. He is the author and co-author of several technical papers in journals and international conferences.

Bakhorji's main interests have been in rock properties research, primarily for geophysical purposes. Currently, his research focus is on seismic lithology and fluid identification, reservoir characterization, and quantitative seismic interpretation. He carried out extensive laboratory experiments that focus primarily on understanding rock physics and mechanics, and how they influence geophysical observations in carbonate rock.



Co-Chair **Mohammed Badri** Schlumberger

Since March 2006, Dr. Mohammed Badri has been the managing director of Schlumberger Dhahran Carbonate Research Center based in Dhahran, Saudi Arabia. He manages the technology and research development of research portfolio and industrial collaboration projects between Schlumberger and the industry as well as academia. He holds B.Sc., Master, and Ph.D. from the United States. He was employed by King Saud University in Riyadh from 1985-1990 as an assistant professor of geophysics. In 1990, he joined Schlumberger Oilfield Services in Dhahran, Saudi Arabia, in charge of interpretation and development of seismic and acoustic measurements. Since then he has held several technical and management positions in the Middle East and Asia regions. He has also worked in China, Malaysia, Indonesia, Vietnam, Egypt, UAE, and Saudi Arabia. Badri has published over 50 professional papers and participated in many professional conferences on executive committee, invited speaker, panel moderator, and technical session's chairman. He is member of the Society of Petroleum Engineers (SPE), Society of Exploration Geophysicists (SEG), and European Association of Geoscientists and Engineers (EAGE). Badri also holds several patents. He is member of KAUST International Advisory Board (KIAB), KAUST Industrial Collaboration Program (KICP), Industrial Advisory Board of the Petroleum Engineering Departments of King Fahd University of Petroleum and Minerals (KFUPM), King Saud University, and Oxford Center for Collaborative Applied Mathematics at Oxford University (OCCAM).

**Abdulmohsin Dolaijan****GeoTechnology and Services**

Abdulmohsin Dolaijan is the founder and director of Exploration and Development Geo-Technology and Services (EDGS) providing consulting and services for oil and gas upstream businesses in Saudi Arabia and the Middle East.

Dolaijan has more than 30 years of experience in the oil and gas upstream business mostly with Saudi Aramco and SRAK (Aramco and Shell joint venture). He has a B.Sc. degree in physics. In addition, he has a M.Sc. degree in engineering geosciences from the University of California, Berkeley, and a Ph.D. degree in geophysical engineering from Colorado School of Mines, Colorado, USA.

He worked on numerous projects and held several senior positions. Between 1981 and 1994, he worked in data processing and conducted research on seismic amplitude variation with angle (AVA), wavelet estimation, deconvolution, multiples suppression, and reservoir characterization. In mid-1994, he became a supervisor leading several teams responsible for 3D seismic data processing activities covering Shaybah, Ghawar, and Central Arabia for both field development and deep gas exploration.

In 1996, he was promoted to the position of chief geophysicist leading several teams in charge of all 2D and 3D data acquisition. During his tenure, the crew level reached for the first time in Saudi Aramco to 11 crews including a marine OBC 3D crew and several high channel count 3D crews. From early 2000 until December 2003, he was the assistant to the vice president of exploration responsible for planning, contracting, and training activities of the exploration organization.

Late in 2003, he joined Saudi Aramco's negotiation team that led to the formation of South Rub Al Khali Company Limited (SRAK) which is currently a joint venture between Saudi Aramco and Shell exploring for non-associated deep-gas in Rub Al-Khali. From January 2004 until the end of December 2010, he was a member of the management team of SRAK and responsible for its geophysical and related data management activities.

**Ali Nabi Mukhtar****BAPCO**

Ali Nabi Mukhtar graduated from the University of Texas at Austin in 1986 with degrees in geological engineering and petroleum engineering. He joined The Bahrain Petroleum Company (Bapco) and started to work as an exploration geophysicist. He moved on to hold many positions of responsibility as a senior geophysicist, head of reservoir characterization team, head of new ventures, head of exploration, and currently works as manager deep-gas E&P.

Mr. Mukhtar is a member of SPE, SEG, and AAPG. His main professional interest is in dealing with oil and gas E&P challenges and especially deep tight gas reservoirs in the Gulf region



Badria Ali KOC

Badria Ali has 32 years of experience in technical and leadership roles within KOC. Since 2005, she has held the position of field development manager of the second largest oilfield in the world, the Greater Burgan Field. In 2008, she has been assigned as manager of Field Development North Kuwait group. She has made many step changes in achievements while progressing the development of different Kuwaiti Fields. Her strength lies in successfully engaging teams to deliver ahead of schedule on key projects. Because of her unwavering focus on timely delivery, she is assigned to lead many activities important to KOC senior Leadership outside the field development core activities. Ali graduated from Kuwait University with a B.Sc. in chemical engineering and joined KOC in 1982.



Fred Mittaine CGG

Fred Mittaine has an academic background in math and physics and is a graduate of Ecole des Ponts ParisTech.

Since 2006, Mittaine has been working with CGG in Egypt, Indonesia, Oman, Cuba, Saudi, France, and UK. He spend several years managing land and shallow water seismic acquisition crews and implementing innovative seismic processing sequences for OBN and land 4D data sets. Now branch manager for CGG in Abu-Dhabi, he develops integrated reservoir characterization workflows to maximize the value of geological and geophysical studies in tackling the new challenges such as deep-gas exploration and production.



Mohammed Mugheiry OOCEP

Mohammed Al Mugheiry obtained his MSc of Geosciences from Pennsylvania State University, USA in 1995. He has over 18 years of experience in the E&P industry. He started his career with Petroleum Development Oman (PDO) as an exploration geologist. Al Mugheiry was then posted to work with Shell in The Hague, Netherlands as a regional geologist for MENA exploration new venture team.

Following his posting with Shell, he joined RAK Petroleum as senior explorationist supporting various held assets in Oman/ UAE and coordinating the company's new venture business opportunities.

Since 2010, he has been working for Oman Oil Exploration and Production (OOCEP) on various managerial posts and currently as new venture director responsible for exploration and new venture projects.



Mahfoud Al-jenaibi ADCO

Mahfoud Al-jenaibi earned his B.Sc. degree in geology and physics in 1983 from U.A.E University. He has 30 years of multi-disciplinary oil industry experience in areas of applied geophysics and exploration and production activities. He joined ADNOC in 1983 and seconded to ADCO in 2001 as a geophysical specialist. He was cross pond in 2000 to Rijswijk (Hague) in Holland by ADNOC for six months for trained assignment in Advanced Industry Technical and Leadership. Al-jenaibi has extensive experience in seismic data acquisition, processing, planning, and supervising of ADNOC/OPCOS seismic activity; excellent knowledge of 1D/2D/3D seismic exploration, processing, and interpretation; regional mappings; and prospect and field evaluation. He joined ADCO-BAB team as a reservoir geophysicist in 2002 and was involved in BAB field 3D seismic preparation, fault evaluation, seismic attribute extraction and mapping, geostatistical analyses, acoustic impedance inversion, reservoir characterization, and data integration visualization. He has a good knowledge of different geophysical software programs and a good understanding of petroleum developing and drilling reservoirs, engineering, and is accustomed to working in multi-disciplinary teams. Al-jenaibi joined the ADCO exploration team in 2005 as geophysical specialist, geophysics coordinator, and is currently a geophysics team leader with exploration and geophysics. He is a project manager of the first 4D seismic acquired in UAE/ ADCO concession over ASAB field. Currently, he coordinates passive seismic surveys to reduce risk drilling, exploration leads, and mature them to prospects. His areas of interest include 3D reservoir characterization, property mapping, 3D seismic interpretation, passive seismic, prospect generation, and 4D time lapse seismic. He attends and shares in most of international petroleum exhibition and conference (e.g. ADIPEC, EAGE, GEO (Bahrain), AAPG, SEG). He is a member of EAGE and SPE.



Simon Robinson Anadarko

Simon Robinson is a geophysical advisor and manager of geophysical technology at Anadarko based in London.

During more than 35 years in the oil and gas industry, Robinson has lived in many regions of the world working on seismic acquisition and processing projects. He has contributed to exploration and development projects in countries such as Algeria, Mozambique, the USA, Australia, New Zealand, Argentina, and Qatar. His current role is advisory and split unequally between potential shale projects and deepwater E&P projects.

Robinson started his career with The Analysts in Sharjah before moving into seismic activities working at Petty Ray, GeoSystems, Geosource, and Halliburton Geophysical. He worked as an independent consultant before joining Anadarko for the second half of his career.

He has presented technical papers on the effective use of 3D seismic acquisition and processing technologies at industry meetings, workshops, and forums.

Robinson has been a member of the SEG for over 30 years and is also a member of the EAGE and PESGB. He holds a BA (mod) in Geology from Dublin University.

SEG WORKSHOP

Exploiting Deep-gas Resources through Advanced Geophysical Technology

3–5 November 2014
Muscat, Oman



SEG Middle East
Society of Exploration Geophysicists
The international society of applied geophysics



All Technical Sessions, Coffee Breaks, and Lunches at the Grand Hyatt, Muscat, Oman

Sunday, 2 November 2014

5:00 - 7:30 PM.....Registration & Icebreaker: Garden Area, Grand Hyatt

Monday, 3 November 2014

07:00 - 7:55 AM.....Registration: Afrah Ballroom, Section I & II, Lobby Level
Coffee, Tea, Juices and Morning Refreshments Available

8:00 - 8:15 AM.....**Special Address by workshop chairmen:** : Aiman Bakhorji, Saudi Aramco and Mohammed Badri, Schlumberger

8:15 - 8:30 AM.....**Keynote Speaker:** Salim Rawahi, Petroleum Development Oman (PDO)

➤ Session No. 1 Basin Analysis and Modeling

Session Chair:James Efsthathiou, Mubadala Petroleum, UAE

8:30 - 9:00 AM.....**A Regional Overview of the Deep-gas Potential of the Middle East**, James Efsthathiou Mubadala Petroleum, UAE

9:00 - 09:30 AM.....**The Deep-gas Reservoirs of North Oman**, Juma Al Balushi, Mubadala Petroleum, Oman

9:30 - 10:00 AM30 Minute Break

➤ Session No. 2 Advanced Seismic Acquisition and Processing

Session Chair:Mahfoud Al Jenaibi, Abu Dhabi Company for Onshore Oil Operations (ADCO)

10:00 - 10:30 AM.....Robert Rowe, Saudi Aramco

10:30 - 11:00 AM.....**Whatever Happened to the Signal? Or, How Point Receivers are Required to Exploit Deep Gas**,
Peter van Baaren, WesternGeco

11:00 - 11:30 AM.....**Full-Azimuth Surface Seismic Data Optimization for Inversion: Can We Leave The Acquisition Geometry Behind While Processing?** Brendon Mitchell, Drillsearch Energy Limited

11:30 - 12:30 PM.....Discussion: 1 hour

12:30 - 13:45 PMLunch at Mokha Café

➤ Session No. 3 Innovative Seismic Technology I

Session Chair:.....Pedro Balaguera, Petroleum Development Oman (PDO)

13:45- 14:15 PM.....**Technology is not the Silver Bullet**, Bernardus Michels, Petroleum Development Oman (PDO)

14:15- 14:45 PM.....**Inference of Reefal Growth within the Permian Khuff Formation from High Resolution 3D Seismic Data And its Relevance in Deep Gas Exploration in Kuwait**, Raju Arasu, Kuwait Oil Company (KOC)

14:45 - 15:15 PM.....**Improvement in Data Quality by 3D Seismic Reprocessing: A Case Study from Block 60, Sultanate of Oman**, Shiw Shambhu Tiwari, Oman Oil Company Exploration and Production (OOCEP)

15:15 - 15:30 PM.....15 Minute Break

➤ Session No. 4 Innovative Seismic Technology II

Session Chair:.....A.Nabi Mukhtar, Bahrain Petroleum Company (BAPCO)

15:30 - 16:00 PM.....**Complex Geology – Case Studies of Full Wave Form Inversion Imaging Deep Gas Plays**, Phil Bording, Wave Research

16:00 - 16:30 PM.....**Pushing the Bandwidth Further on Conventionally Acquired Marine Data**, Ivica Mihaljevic, Schlumberger

16:30 - 17:30 PM.....Discussion: 1 hour

17:30 PM.....End of Day 1 (3 November 2014)

Tuesday, 4 November 2014

Afrah Ballroom, Section I & II, Lobby Level

8:15 - 8:45 AM.....**Keynote Speaker: Fit for Purpose Geophysical Technologies to Exploit Deep Gas Resources,**
Mohammed Otaibi, Saudi Aramco

► Session No. 5 Borehole Geophysics and Microseismic

Session Chair: *Frederic Mittaine, CGG*

8:45- 9:15 AM..... **Use of Borehole Seismic Technologies to Address Challenges in Deep Gas Reservoir Characterization & Understanding,**
Abdurahim Roberts, Baker Hughes

9:15 – 9:45 AM..... **Locating Micro-Seismic Sources at High Resolution Using Migration-Based Deconvolution of Multi-Component Borehole Recordings,** *Jakob B.U. Haldorsen, Reservoir Evaluation and Development (READ)*

9:45 – 10:15 AM..... **Estimation of Seismic Attenuation and Prediction of VTI Anisotropy Parameters from VSP and Log Data: A Middle East,**
Abdulaziz Alasbali, Curtin University

10:15 – 10:30 AM..... 15 Minute Break

► Session No. 6 Reservoir Evaluation and Characterization I

Session Chair: *Mohammed Mugheiry, Oman Oil Company Exploration and Production (OOCEP)*

10:30 – 11:00 AM..... **Using Microseismic Monitoring to Understand Stimulation of Complex Fractured Unconventional Reservoirs,**
John Daniels, Schlumberger

11:00 – 11:30 AM..... **Reservoir Characterization of the First Low Frequency WAZ Survey in Oman,** *Agnes van Bruggen, Petroleum Development Oman (PDO)*

11:30 – 12:45 PM Discussion: 1 hour and 15 min

12:45 – 14:00 PM Lunch at Mokha Café

► Session No. 7 Reservoir Evaluation and Characterization II

Session Chair: *Aiman Bakhorji, Saudi Aramco*

14:00 – 14:30 PM..... **Rock Physics Based Deep Tight Sand Sweet Spot Prediction in Block B in Middle East,** *Jianli Yang, Elsiwave Technology*

14:30 – 15:00 PM **Lithology Prediction and Thin Bedded Layer Detection by Studying Variation of Elastic,**
Masoud Aali, Gubkin Russian State University

15:00 – 15:30 PM **A Case Study of Prestack Orthotropic AVAz Inversion for Fracture Characterization of a Tight Deep Carbonate Reservoir of Kuwait,** *Vijaya Kidambi, Kuwait Oil Company (KOC)*

15:30 – 15:45 PM..... 15 Minute Break

15:45 – 16:45 PM Discussion: 1 hour

16:45 PM..... End of Day 2 (4 November 2014)

18:45 PM..... Depart to Crowne Plaza Hotel, Gala Dinner at the Grand Lawn

19:00 - 21:30 PM..... Dinner and Networking (Busses will return guests to the hotel at the conclusion of the dinner)

Wednesday, 5 November 2014

Afrah Ballroom, Section I & II, Lobby Level

8:15 - 8:30 AM..... **Keynote Speaker: Multi-Disciplinary Integration Driving Success in Tight Gas Reservoirs,**
Christopher Fredd, Schlumberger

► Session No. 8 Reservoir Engineering and Fracturing

Session Chair: *Bill Lindsay, Baker Hughes*

8:30 – 9:00 AM..... **Reservoir Engineering of Unconventional Reservoirs,** *Haq Minhas, Baker Hughes*

9:00 - 9:30 AM..... **New Paradigms for Hydraulic Fracture Monitoring in Oman,** *Mahmoud El-Gihani, Schlumberger*

9:30 – 10:00 AM..... **The Value of Prestack Seismic Inversion for 3D Geomechanical Modeling,** *Tone E.Trudeng, Schlumberger*

10:00 – 10:15 AM..... 15 Minute Break

► **Session No. 9 De-risking Drilling with Geophysical Solutions**

Session Chairs:Abdulmohsin Dolaijan, GeoTechnology and Services and Emad Muzaiyen, Saudi Aramco (Co-chair)

10:15 – 10:45 AM..... **Integrating Geophysics with Drilling and Completions to Reduce Risk for Deep-gas Exploration,**
Mark Egan, Schlumberger

10:45 – 11:15 AM..... **PeriScope High Definition - Innovative Multilayer Bed Boundary Detection Service,** Xiaoyan Zhong, Schlumberger

11:15 – 11:45 AM..... **The Role of Seismic Pore Pressure Prediction and Seismic Attributes in Minimizing Drilling Risks,**
Badr Jan, Saudi Aramco

11:45 – 12:45 PM.....Discussion: 1 hour

12:45 – 13: 45 PM.....Panel Discussion: Mohammed Badri, Schlumberger (Moderator)

13:45 – 14:45 PMLunch at Mokha Café

14:45 PMEnd of Day 3 (5 November 2014)

Online Registration OPEN

*2014 Distinguished
Instructor Short Course*



**Microseismic Imaging
of Hydraulic Fracturing:
Improved Engineering of
Unconventional Shale
Reservoirs**

Presented by Shawn Maxwell

23 November - Abu Dhabi, UAE

25 November - Muscat, Oman

27 November - Al-Khobar, KSA



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for more information

Keynote Speakers



Salim Rawahi, PDO

Chief Geophysicist, Petroleum Development Oman (PDO)



Mohammed Otaibi

Chief Geophysicist, Saudi Aramco

Mohammed Al-Otaibi has been working for Saudi Aramco for more than 20 years. He worked for more than 10 years as a seismic interpreter to support reservoir development and later spent seven years within the seismic modeling and inversion team through which he later led the team and then was promoted to chief geophysicist for Geophysical Technical Services Division. Six months ago, he was assigned the chief geophysicist role for the Geophysical Data Processing Division.

Al-Otaibi attained his Ph.D. in Geophysics from the University of Houston in 2002 and has presented at several meetings including EAGE, SEG, and GEO. His interests are AVO and seismic interpretation.



Christopher N. Fredd

Unconventional Resources Technology Integration Group Manager for Middle East Area Schlumberger

Chris Fredd is the Unconventional Resources Technology Integration Group Manager for the Middle East Area and serves as a Reservoir Stimulation Advisor for Schlumberger. His current focus is on applying a multi-disciplinary approach to exploring and exploiting unconventional resources. Fredd has 17 years of experience with Schlumberger in a wide range of reservoir environments including carbonates, tight sandstones, shale, and coal bed methane. He has held various positions in field operations, technology implementation, and new product development in North and South America, Russia, and the Middle East. He holds 18 patents and almost 30 publications in the areas of matrix acidizing, fracture acidizing, hydraulic fracture conductivity, and unconventional reservoir stimulation. Fredd earned his B.S. degree from Clarkson University and M.S. and Ph.D. degrees from the University of Michigan, all in Chemical Engineering.

SEG/KOC
JOINT WORKSHOP

**Seismic multiples –
Are they signal
or noise?**



**Kuwait City, Kuwait
1–3 December 2014**



For more information:
Ozlem Kocak, Meeting Planner
+971 4 371 2857 Phone
+971 4 372 4204 Fax

**2014 SEG/KOC Workshop
1–3 December 2014**

Seismic multiples – Are they signal or noise?

Location: Kuwait City, Kuwait

Venue: The Regency Kuwait Hotel

Register Online

www.seg.org/events/upcoming-seg-meetings/kuwait2014

Advance registration ends 3 November 2014

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ORGANIZING COMMITTEE

Ahmad Eidan (Chair), KOC; Mohammed Al Ajmi (Co-Chair), KOC; Adel El-Emam, KOC; Riyadh S. Al-Saad, Saudi Aramco; Maurice Nessim, Schlumberger; Clement Kostov, Schlumberger; Mohamed Hadidi, ADCO; Matthieu Retailleau, CGG; Jim Shorter, PDO; Jarrah Al-Jenaie, KOC



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The international society of applied geophysics

SEG Middle East - Calendar of Events

OCTOBER 2014

SEG International Exposition and 84th Annual Meeting
Denver, Colorado, USA
Registration Open!
www.seg.org/am

- 26–31 October 2014 – Colorado Convention Center

NOVEMBER 2014

2014 Distinguished Instructor Short Course – Shawn Maxwell
Microseismic Imaging of Hydraulic Fracturing: Improved Engineering of Unconventional Shale Reservoirs
www.seg.org/disc

- 23 November – Abu Dhabi, UAE
- 25 November – Muscat, Oman
- 27 November – Al Khobar, Saudi Arabia

DECEMBER 2014

Seismic multiples – Are they signal or noise?
www.seg.org/meetings/Kuwait14

Online Registration is Available!

Advanced registration deadline: 3 November 2014

- 1–3 December 2014 – The Regency, Kuwait City, Kuwait

Middle East & Africa Honorary Lecturer Bruce Blake
Improving seismic structural time-map accuracy with better near-surface measurements
www.seg.org/hl

- | | | | |
|---------------------|------------------|-----------------------|-----------------------|
| • 2–3 December 2014 | Algiers, Algeria | • 10 December 2014 | Dhahran, Saudi Arabia |
| • 7 December 2014 | Cairo, Egypt | • 11 December 2014 | Thuwal, Saudi Arabia |
| • 9 December 2014 | Al Ain, UAE | • 14–15 December 2014 | Muscat, Oman |
| • 9 December 2014 | Abu Dhabi, UAE | | |

MARCH 2015

3rd SEG Middle East Geoscience Student Symposium
Sponsorship Open!

- 23–25 March 2015 (More information coming soon)

Full Waveform Inversion: Filling the gaps
Call for Contribution and Sponsorship is Open!

Abstract submission deadline: 17 January 2015

- 30 March – 01 April 2015 – Jumeirah at Etihad Tower, Abu Dhabi, UAE

APRIL 2015

SEG-SPE Giant Fields Monitoring
Sponsorship Open!

- 13–15 April 2015 – Jumeirah at Etihad Tower, Abu Dhabi, UAE

MAY 2015

Intrashelf Basins of the Middle East Workshop
Sponsorship Open!

- 11–13 May 2015 Dubai, UAE (More information coming soon)

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Technology

3–5 November 2014
Muscat, Oman



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